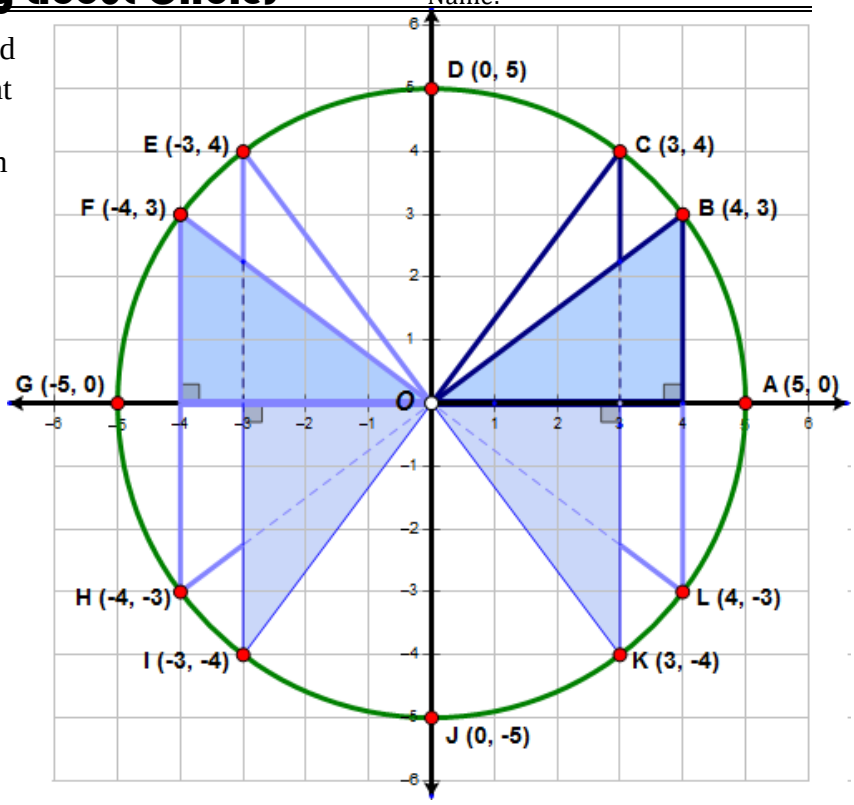
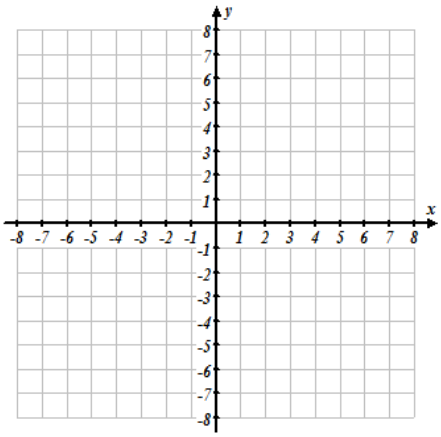
What is a circle? It is geometrically defined by a set of points or locus of points that are equidistant from a point (the ***center***). Consider the circle at the right. What is the length of every segment drawn from center O to a point on the edge of the circle?

How would you find the length of segment OB?

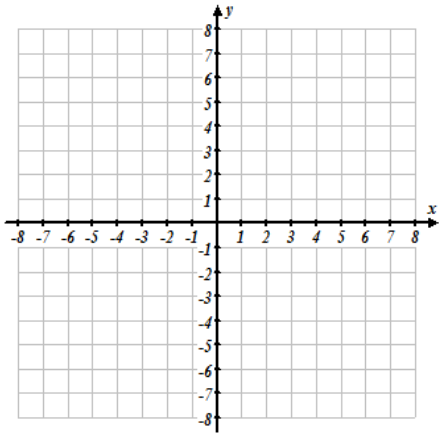


1. ***Basic Circles*** Graph the following:

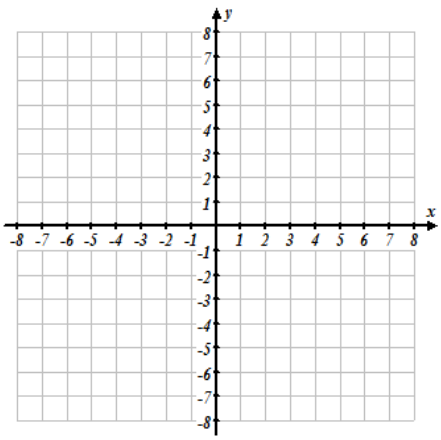
A. $x^2 + y^2 = 4$



B. $x^2 + y^2 = 36$

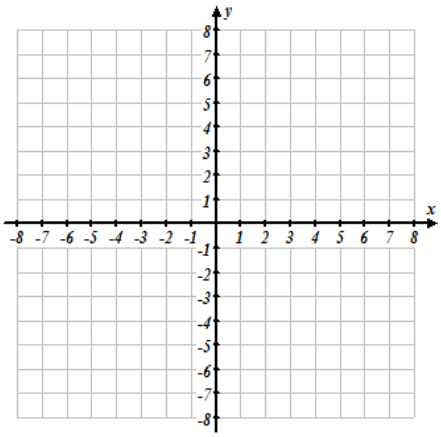


C. $x^2 + y^2 = 20$

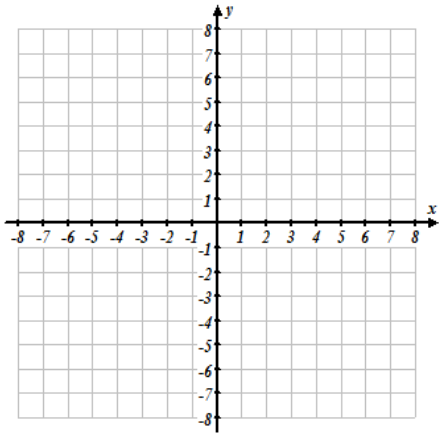


2. ***Translated Circles*** Graph the following:

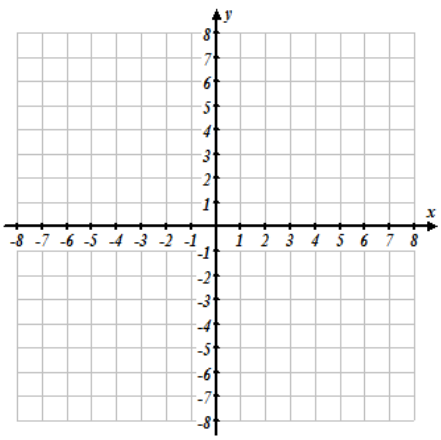
A. $(x-4)^2 + (y+2)^2 = 9$



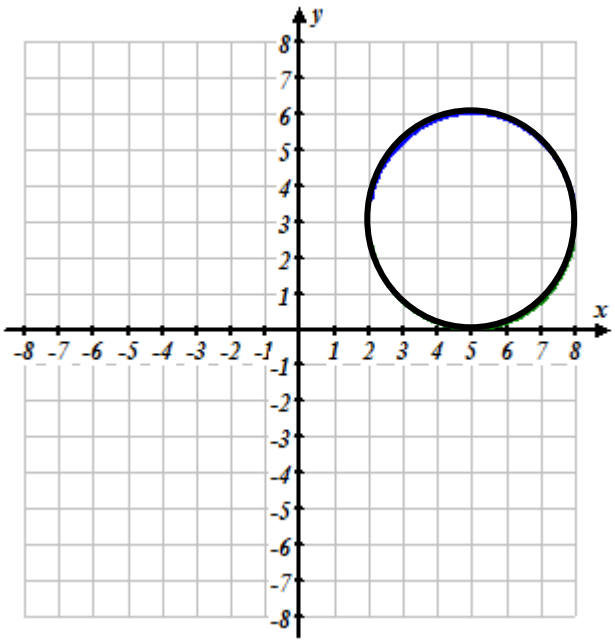
B. $(x+3)^2 + (y+1)^2 = 25$



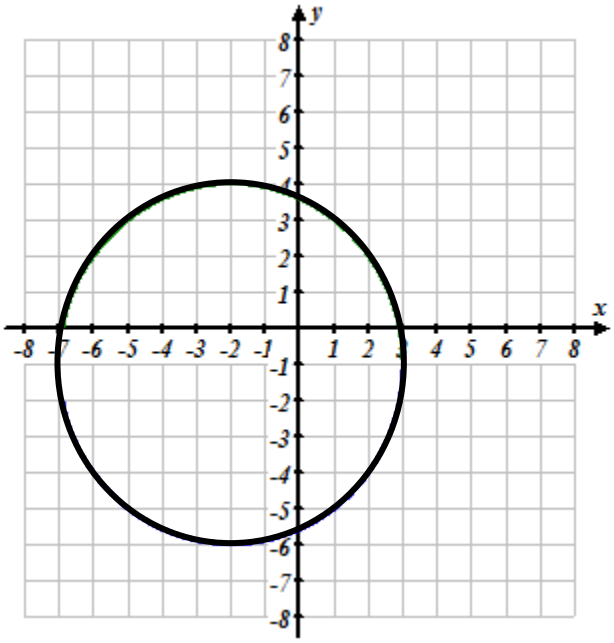
C. $(x+2)^2 + (y-3)^2 = 18$



3. ***Equations of Circles*** Find the equation of each of the following:



a. $(x$_____$)^2+(y$_____$)^2=$_____



b. $(x$_____$)^2+(y$_____$)^2=$_____

4. ***Equations of Circles*** The following design is composed of 3 full circles and 2 semi-circles. Can you find the equations of each and put them in your calculator?

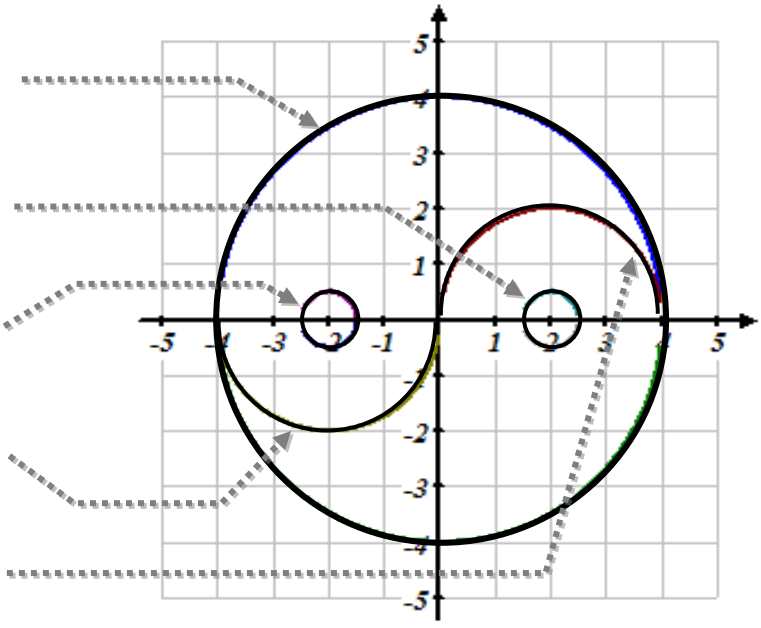
a. $(x$_____$)^2+(y$_____$)^2=$_____

b. $(x$_____$)^2+(y$_____$)^2=$_____

c. $(x$_____$)^2+(y$_____$)^2=$_____

d. $(x$_____$)^2+(y$_____$)^2=$_____

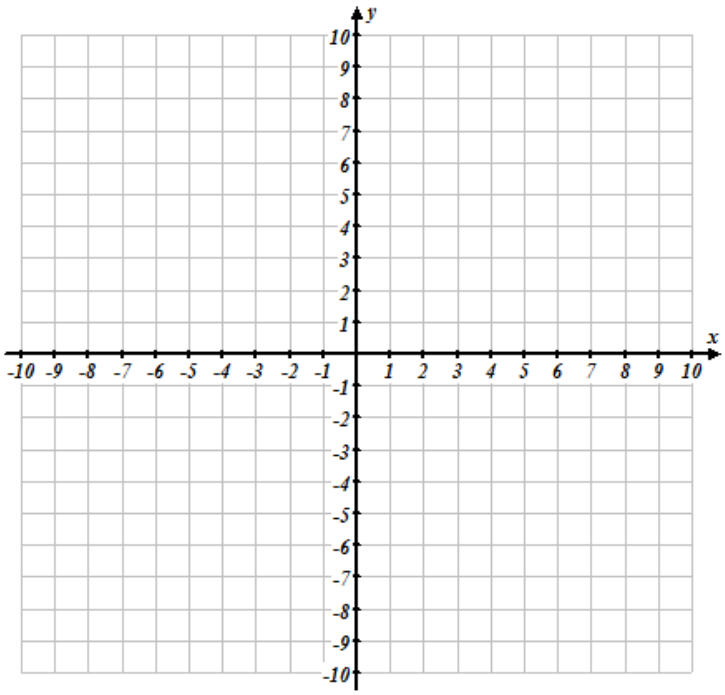
e. $(x$_____$)^2+(y$_____$)^2=$_____



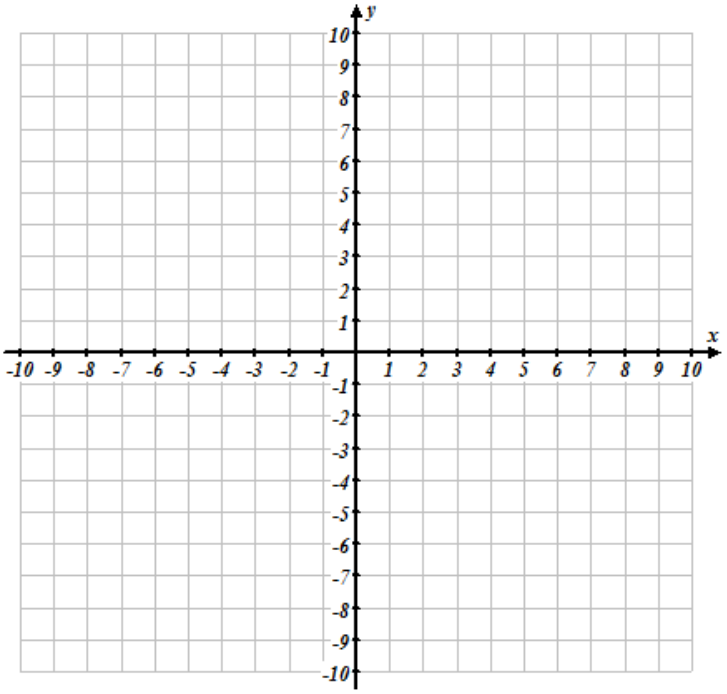
** When you put these in your TI-83/84 calculator you will have to solve for y using the square root method you may have to use two equations to describe a complete circle. For example if you wanted to graph the complete circle $(x-4)^2+(y+2)^2=9$. It would require that you use two equations $y_1=\sqrt{9-(x-4)^2}-2$ and $y_2=-\sqrt{9-(x-4)^2}-2$

5. Finding Standard form of circles. Put the following circles in standard form and graph them.

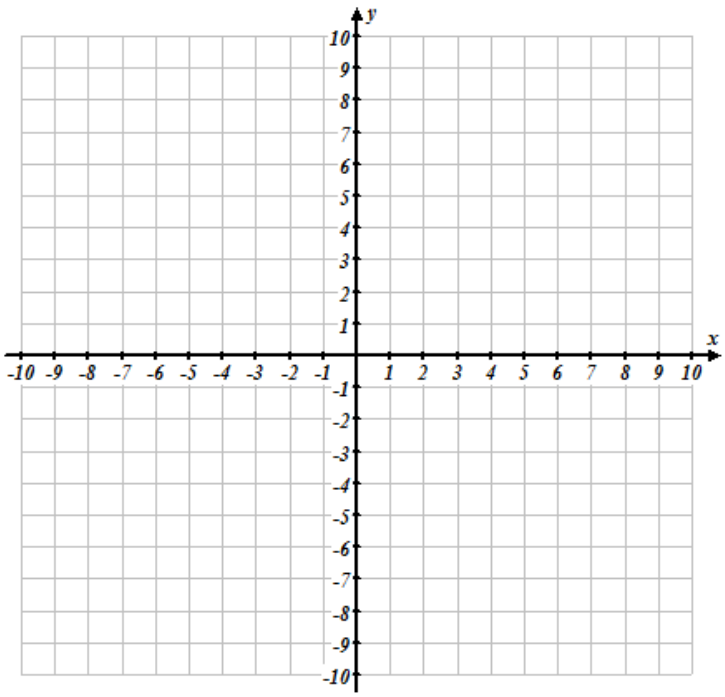
A. $x^2 + y^2 - 10y + 9 = 0$



B. $x^2 + y^2 - 2x + 8y = -8$



C. $x^2 + y^2 - 6y - 2x = 15$



D. $2x^2 + 2y^2 - 8x + 12y = 6$